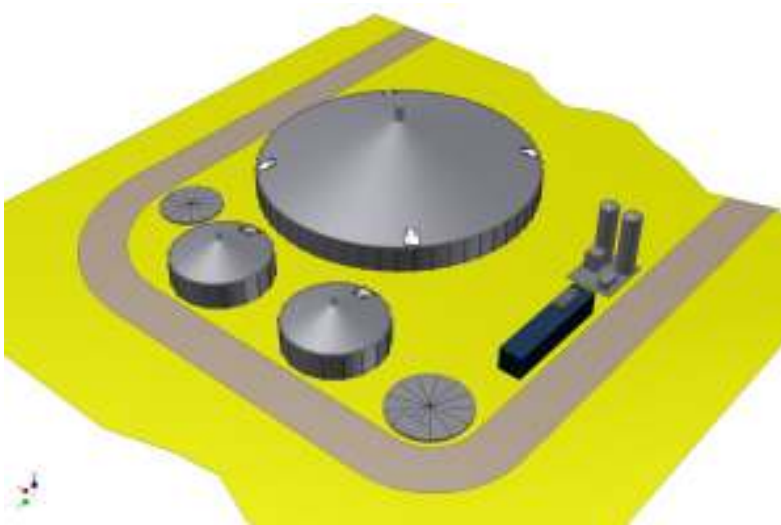


# Business Plan

## Bioenergi Finnøy AS (ltd)



<b>Established :</b> 4 August 2009
<b>Address :</b> Ryfylke Næringshage, 4160 Finnøy, Norway
<b>CEO :</b> Kristian Spanne

**Based on the methods of Sustainable Supply Chain Management in Bioenergy**

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May 2012

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### 1. vision and mission

The municipality of Finnøy has a large amount of animal husbandry and about 40 % of the tomato production in Norway (greenhouses). The fact is that there, at the main island in the municipality (Finnøya) is too much manure related to the environment legislations. Further on – the greenhouses today use Natural gas from the North Sea – distributed in a separated grid (see figure/map) and the also use the exhaust gas (CO<sub>2</sub>) as fertiliser in the tomato production.

The expectation (business concept) for Bioenergi Finnøy Ltd is to be a plant for “substrate treatment” – producing biogas, electricity and CO<sub>2</sub> for using in the tomato production and to make new fertiliser products from the degassed slurry. New fertiliser products made by local resources and used by local farmers, will reduced costs for the local farmers. The local stakeholder/farmers are very motivated for the project.

An important frame for the project is the national agriculture and climate/environment policy. Finnøy is a municipality in the County of Rogaland. Rogaland is the most important county in Norway, within animal husbandry (all kinds). The Government and the regional partnership want Rogaland to be in the front of producing biogas based on manure and other organic waste from farmers and gardeners. The first target in Rogaland is to make three pilots biogas plants. And Bioenergi Finnøy Ltd wants to be one of these.



### 2. development and regular assessment of strategy

The “project” Bioenergi Finnøy Ltd started for more than three years ago, but has not reach the decision point. The Business Plan is completed. The main challenge now is to make the investment profitable. The preliminary work has been partly financed by Innovation Norway – and with some money from The County Governor of Rogaland for getting appropriated knowhow. The own efforts by the CEO is app. 80 000 euro so fare.

The business idea is to produce biogas for hot water, electricity and CO<sub>2</sub> for the gardener is Lauvsnes Gartneri, owned by Lisa and Jan Terje Vignes. They are producing on an area of 1, 5 hectares. Bioenergi Finnøy Ltd have signed a letter of intent with Lauvsnes Gartneri buying that they shall buy production of hot water, electricity and CO<sub>2</sub>. The price is not settled, but it must be competitive with the marked price of Natural gas and electricity.



So the strategy for Bioenergi Finnøy Ltd is to sell all energy to only one customer (Lauvsnes Gartneri, neighbour to the biogas plant) and use the degassed slurry mainly at the local farmland. Probably will there be a surplus of phosphor from the digestive process and the separate phase – and the plan for this is to make fertiliser products and different type of soil conditioner products.

### 3. quality policy

The methods of Sustainable Supply Chain Management (SSCM) have been a quality – and “check-out”- tool for the process;

- ✓ basis for decision for stakeholders
- ✓ for resource planning
- ✓ methodology SSCM →→→→

Using the SSCM tool for this project has been valuable. And the conclusion is that the main challenge of the project is to make it profitable – the subsidies must increase. The second challenge is to secure sufficient supply of fish waste. The fish waste is a very attractive recourse at the international marked, and Bioenergi Finnøy Ltd can only pay NOK 200 per ton (26, 4 euro). Today – the international marked will pay much more.

Sustainable indicators	Key performance indicators
econ	Materials supply; quantity and prices
soc	Positive image
Econ - ecol	The use of the degassed slurry
Econ - ecol	The logistic
econ	Prices (gas, heat, electricity)

### 4. business and quality objectives

The production of biogas is based on manure, fish waste and organic waste from the tomato gardener (mainly leaves and plants). The biogas production is an all-year production and it is very important that the production is regular and predictable. Another critical factor is the production of CO<sub>2</sub>. The CO<sub>2</sub> is decisive for a competitive tomato production – especially to get a high crop – but the CO<sub>2</sub> must be of high quality without any pollutions.

## 5. market analysis

This is in a way a “hand in glove” project. Bioenergi Finnøy Ltd wants to raise a biogas plant 300 m from the one and only customer – the tomato gardener Lauvsnes Gartner. The production area of Lauvsnes Gartner is 1, 5 hectares and the whole needs of energy and CO<sub>2</sub> will be delivered by Bioenergi Finnøy Ltd. Lauvsnes Gartneri want to transfer from North Sea gas to renewable energy. The degassed slurry will be used by the local farmers. There will probably be a surplus of phosphor. The use of the amount of the phosphor is not yet decided.

## 6. organizational and operational structure, including business areas and cooperations

Bioenergi Finnøy Ltd is registered at the Norwegian Business Register. The share capital is NOK 275.000 (36 294 euro) divided on 275 shares. The board has 5 members.

The CEO has the responsibility for running the company. For the daily running there will be engaged an operations engineer (a 50 % position – labour year). The labour costs will be 0, 00826 euro/kWh. Bioenergi Finnøy Ltd will rent the needed resources for transport (logistics), estimated to 3, 39 euro/ton.

## 7. identification and design of key processes

Bioenergi Finnøy Ltd invited tenders from three companies ; Gøtene Gardsgass (Sweden), BioWaz (Norway) and Lundsby Bioenergi (Denmark). Lundsby Bioenergi was chosen and has now designed and calculated the biogas plan for Bioenergi Finnøy Ltd.

Some key figures for Bioenergi Finnøy Ltd;

- The substrates;
  - 12 000 tons of manure from cattle
  - 2 000 tons of manure from pigs
  - 2 500 m<sup>3</sup> of manure from poultry
  - 2 000 tons of fish waste
  - 600 tons of dead fish
  - 250 tons of tomato leaves

The plant have to pay for the fish waste (NOK 200 per ton/ 26,4 euro)
- Production of gas;
  - Methane; 834.000 Nm<sup>3</sup>
  - Biogas; 1.283.077 Nm<sup>3</sup>
  - Percent of methane; 65 %
- Energy production;
  - 6, 4 GWh hot water
  - 1, 67 GWh electricity
  - 1, 7 GWh to internal process heating (internal)
- Energy price;
  - The price used in the calculation is NOK 0, 36 per kWh (0, 04751 euro per kWh). It must be competitive with the marked price of Natural gas and electricity.
- The degassed slurry
  - Used by the local farmers. The business plan has not calculated any income from the using of the degassed slurry.

- The will probably be a surplus of phosphor. The use of the amount of the phosphor is not yet decided.

➤ The cost of investment;

1) the biogas plant (Lundsby)	NOK 14,7 mill	(1, 94 mill euro)
2) building area	NOK 2,0 mill	(264 095 euro)
3) hygienecition, degassed slurry	NOK 0,7 mill	(92 385 euro)
4) unexpected costs	NOK 0,3 mill	(39 593 euro)
<b>the biogas plant</b>	<b>NOK 17,7 mill</b>	<b>(2,34 mill euro)</b>

The Budget;

Skatteprocent (selskabsskat)		Afskrivningsperiode													
28%		15 År													
	År 1	År 2	År 3	År 4	År 5	År 6	År 7	År 8	År 9	År 10	År 11	År 12	År 13	År 14	År 15
DB1	874.710	874.710	874.710	874.710	874.710	874.710	874.710	874.710	874.710	874.710	874.710	874.710	874.710	874.710	874.710
Afdrag	800.000	800.000	800.000	800.000	800.000	800.000	800.000	800.000	800.000	800.000	800.000	800.000	800.000	800.000	800.000
Renter	560.000	504.000	448.000	392.000	336.000	280.000	224.000	168.000	112.000	56.000					
Overskud før skat	314.710	370.710	426.710	482.710	538.710	594.710	650.710	706.710	762.710	818.710					
Afskrivning	533.333	533.333	533.333	533.333	533.333	533.333	533.333	533.333	533.333	533.333					
Resultat før skat	-218.623	-162.623	-106.623	-50.623	5.377	61.377	117.377	173.377	229.377	285.377					
Skat	-61.214	-45.534	-29.854	-14.174	1.506	17.186	32.866	48.546	64.226	79.906					
Overskud efter skat	-157.409	-117.089	-76.769	-36.449	3.871	44.191	84.511	124.831	165.151	205.471					
Restgæld	8.000.000	7.200.000	6.400.000	5.600.000	4.800.000	4.000.000	3.200.000	2.400.000	1.600.000	800.000					

År 11	År 12	År 13	År 14	År 15
874.710	874.710	874.710	874.710	874.710
-	-	-	-	-
-	-	-	-	-
874.710	874.710	874.710	874.710	874.710
533.333	533.333	533.333	533.333	533.333
341.377	341.377	341.377	341.377	341.377
95.586	95.586	95.586	95.586	95.586
245.791	245.791	245.791	245.791	245.791

Egenkapital efter 15 år efter skat	kr.	1.469.269,93
Egenkapitaltilgang pr. år efter skat	kr.	73.463,50
Forrentning efter skat.		0,9%

There is a need of 50 % subsidies of investment cost. There are still missing approx. NOK 2 mill.